

THE ZOO GOER



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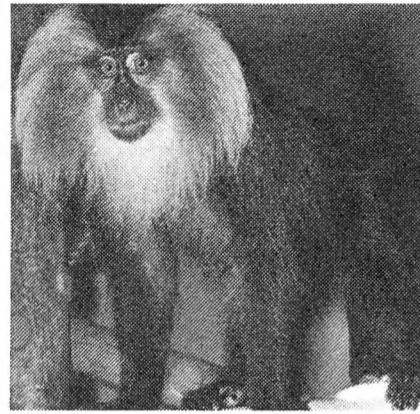
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Front Cover: A lion-tailed macaque is one of several species in the Monkey House that daily demonstrate the importance of smell in the life of a primate.

Back Cover: Giving a gazelle an injection, Dr. Clint Gray (right) carries out a preventive medicine program that enables Zoo animals to live longer than their counterparts in the wild.

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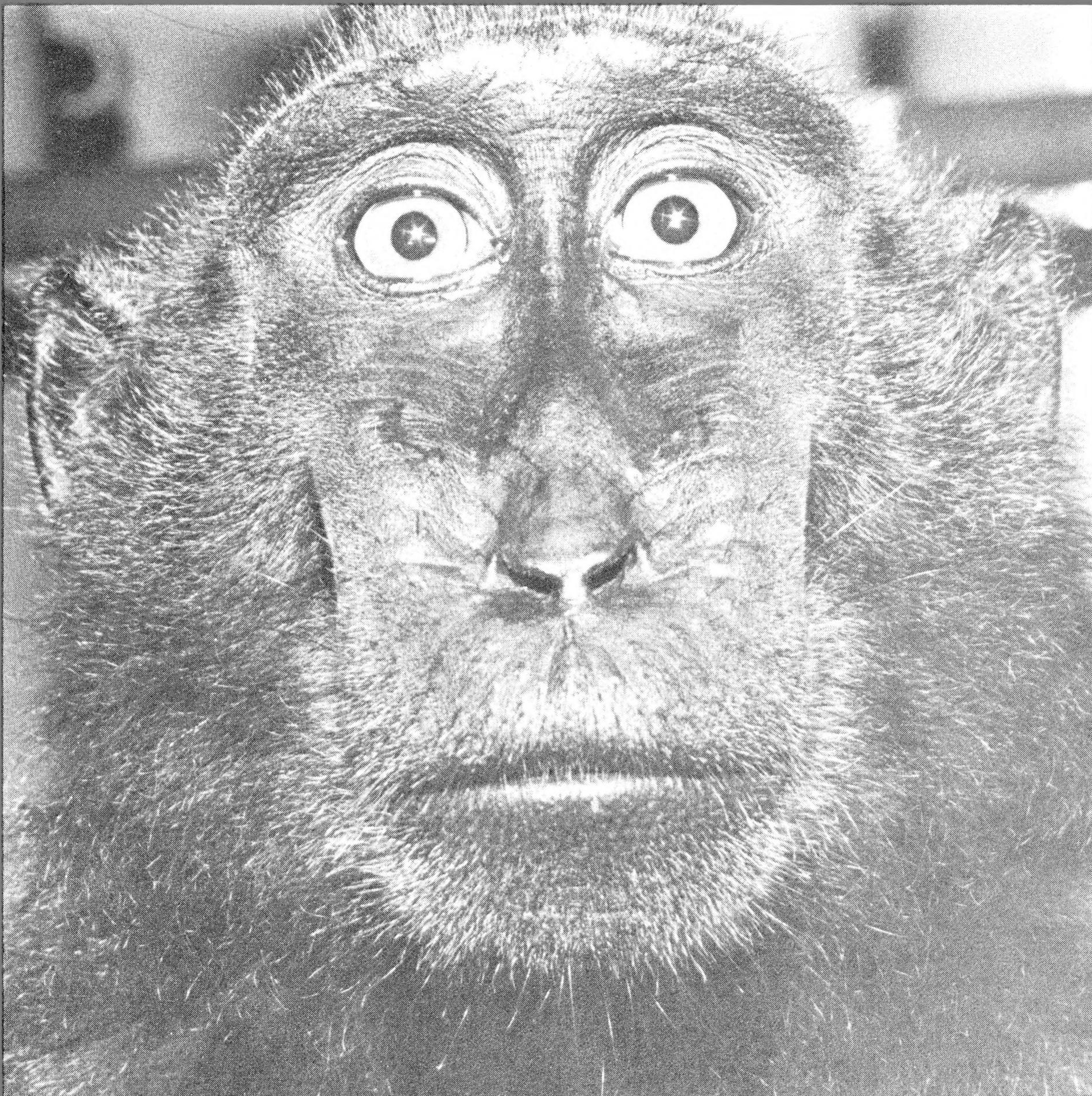
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Primate Noses

Primate Noses

Helen Kafka

Biologists have known for a long time that lower primates (bush babies, pottos, lemurs, etc.) depend heavily on their sense of smell to find food and to regulate social interactions with each other. Like most other mammals, they have large areas of smell-related tissue in their noses. They also have a variety of scent glands and use glandular secretions, urine, and other body scents to defend territory, to establish territorial paths, to mark themselves and each other, and to choose mates.

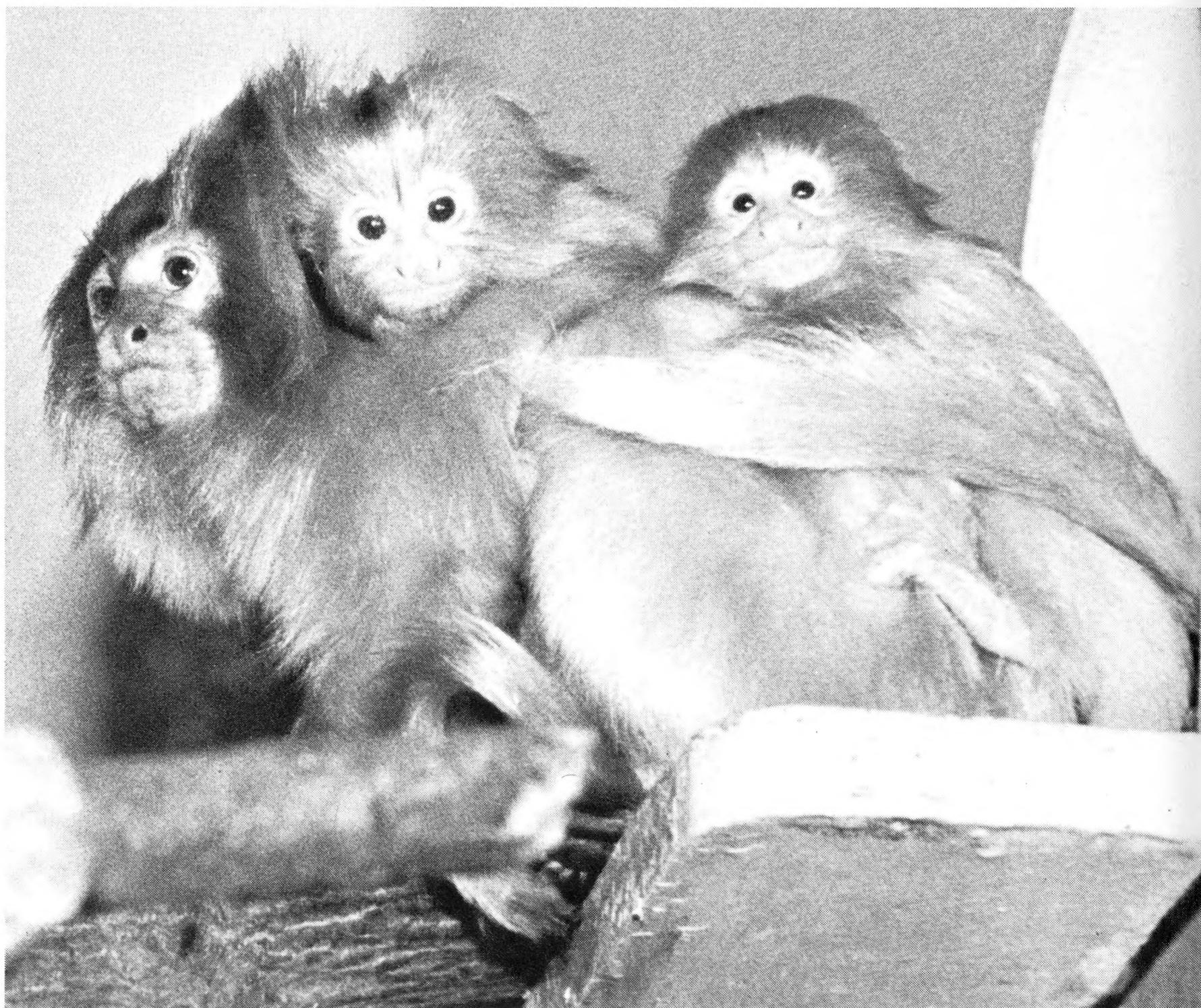
Chemical substances that convey a message from one animal to another are collectively labeled "pheromones." Only recently have the existence and significance of pheromones in the lives of higher primates been documented. Monkeys, apes, and men have much smaller smelling areas in their noses than do most lower mammals, but scent glands and pheromones abound and are of major importance to many, if not all, primates.

Previous Page: A primate nose, like this celebes crested macaque's, is a multi-purpose device that identifies other individuals and their territories, detects dominant and subordinate animals, and gauges sexual receptiveness.

All New World (Central and South America) monkeys have scent glands on their chests. Some species have glands in their anogenital regions as well. The scent-marking of marmosets and tamarins has been studied extensively. Most of the marking in a marmoset group is done by the dominant male and female, so the area the dominant animals occupy becomes saturated with

their scent. A male smells and tastes the markings, urine, and genitals of his mate to learn when she is in estrus. At that time there is a noticeable increase in marking frequency by both animals and in sniffing by the male. A similar increase in marking by the female and sniffing by the male occurs in the latter part of the female's pregnancy. This behavior keeps him close to her and

The Zoo's colony of golden-haired marmosets uses scent secretions to mark and defend territories, identify friends and strangers, choose mates, and even help prepare fathers for their role in raising young.



probably helps prepare him for the birth, after which he assumes much of the infants' care. Marmosets can recognize individuals by scent alone. If a stranger is introduced into a group, the group members of the same sex as the intruder mark each other and their surroundings with great vigor and finally attack the intruder. As many as three days later, they can pick out his scent on a perch from that of other animals and sniff and mark the area where their recent enemy has marked. Likewise, they can discriminate between the marks of a male and a female and those of a dominant and a subordinate animal. (They pay the most attention to male and dominant animals' scents.)

The role of scent-marking has been studied less extensively in other New World primates. The Zoo's howler and woolly monkeys leave most of the marking to dominant males, who have the strongest scent. It is a strong, sweetish smell which clings to all objects, animals, and people with whom the males come in contact. Any kind of alarm or the presence of an estrous female sends the males into vigorous bouts of lip- and chest-rubbing, in which saliva and secretions are mingled to form a thick, brown, oily substance on the spot they choose to mark. When I was a keeper in the

Monkey House, I could always tell when the dominant male woolly monkey was in a bad mood: the sweeter he smelled, the fouler his temper! Uakaris and howlers of both sexes anoint themselves and their surroundings with glandular secretions, saliva, and urine. Uakaris also like to rub strong-scented objects such as citrus peel on their fur. Spider monkeys seem not to mark their surroundings very much, but both sexes anoint themselves with glandular secretions by scratching their fur briskly and rubbing their chest glands against each other, apparently seeking contact with each other's chest glands. The return of an animal who has been separated from the group for a long period stimulates prolonged marking behavior in the Zoo's spider monkey colony.

Many, if not all, New World male monkeys taste or smell the urine of mature females, which tells them when the females are in estrus. During that time, they taste the female's urine and sniff her genitalia with greater frequency than usual.

If alarmed or alerted by an estrous female, male woolly monkeys will vigorously rub their lips and chest against a nearby surface and deposit a strong-smelling, oily-like secretion. It's easy for keepers to know the mood of the dominant male: the sweeter the smell, the fouler the temper!



Little scent-marking behavior has been observed in higher Old World (Africa, Asia, and Europe) primates. They also have different scent glands than New World monkeys. Gibbons do have skin glands on the chest, and the scent of a male Siamang gibbon is noticeable to humans several feet away. Orangutans and gorillas secrete a strong smelling, oily substance over most of their bodies. This secretion may be protection against rain or it may have some other significance. Gorillas and chimpanzees have a characteristic strong odor caused

by bacterial action or secretions from their armpits and pubic regions. The function of these odors is not known, but their presence is indisputable, as Zoo visitors are well aware.

One thing that is known is that many, or perhaps all, monkeys and apes from the Old World depend on their sense of smell to confirm that a female is in estrus. For example, if the nostrils of a male rhesus macaque are plugged with treated gauze to block his sense of smell, he will not copulate with females who

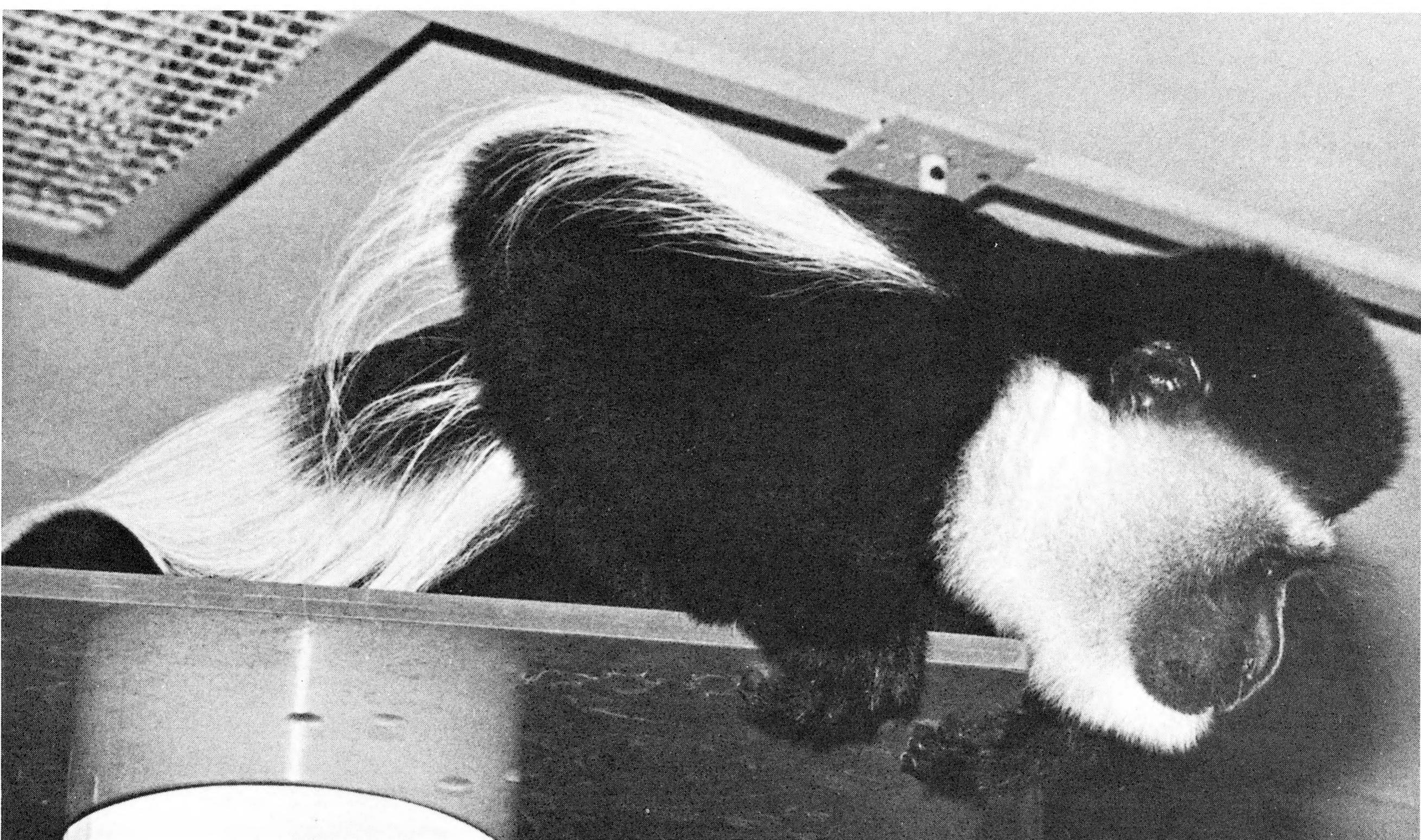
are in estrus—even though their behavior and their pink bottoms clearly advertise their condition to the male's eyes. If the gauze is removed, he will again be interested in the females. Even among macaques (such as the three species that the Zoo exhibits) with conspicuous sexual swelling, males usually sniff females before copulating.

The male-attracting pheromone compounds have been identified from rhesus macaque's vaginal secretions as mixtures of certain organic acids formed by symbiotic bacteria in the presence of the female hormone, estrogen. Similar compounds have been identified in other macaques, baboons, patas monkeys, squirrel monkeys, and man. Jane Goodall noted that male chimpanzees usually investigate females by smell before mating with them—even though the females have dramatic sexual swellings. Keepers at the Zoo have noted similar sniffing behavior among orangutans, but females do not show external signs of estrus.

One researcher has noted that human beings, who also produce sexual pheromones, have what would be considered in a lower mammal a fully-developed set of scent glands. However, as the same researcher points out, it is

Napping with nostrils alert, an orangutan secretes a strong-smelling oil over most of its shaggy-haired body. Some say it's for waterproofing.





Among the Zoo's colony of colobus monkeys, mouth-sniffing is used to check out new food. Infants learn what to eat by watching their mother and smelling her mouth as she eats. Adults behave similarly. Interestingly, subordinate colobus usually sniff dominant colobus.

not possible to draw simple conclusions about the role of smell in human social behavior. That behavior is subject to vast modification and cultural and individual experience.

Little work seems to have been done on the relation between primates' sense of smell and their feeding behavior. However, I have seen some examples of the

use they make of their noses at dinnertime in the Monkey House. If an unfamiliar food is presented to a group of monkeys, they all sniff it carefully, often before touching it. If it has a strong smell, as animal fat does, they are apt to be startled and very hesitant about picking it up. After the first encounter, they will accept or reject it by sight. An infant learns what to eat by

watching its mother eat, trying to take food from her hands, and sniffing her mouth when it sees something go in. Older animals often sniff each other's mouths, and this is tolerated where actual food snatching would not be.

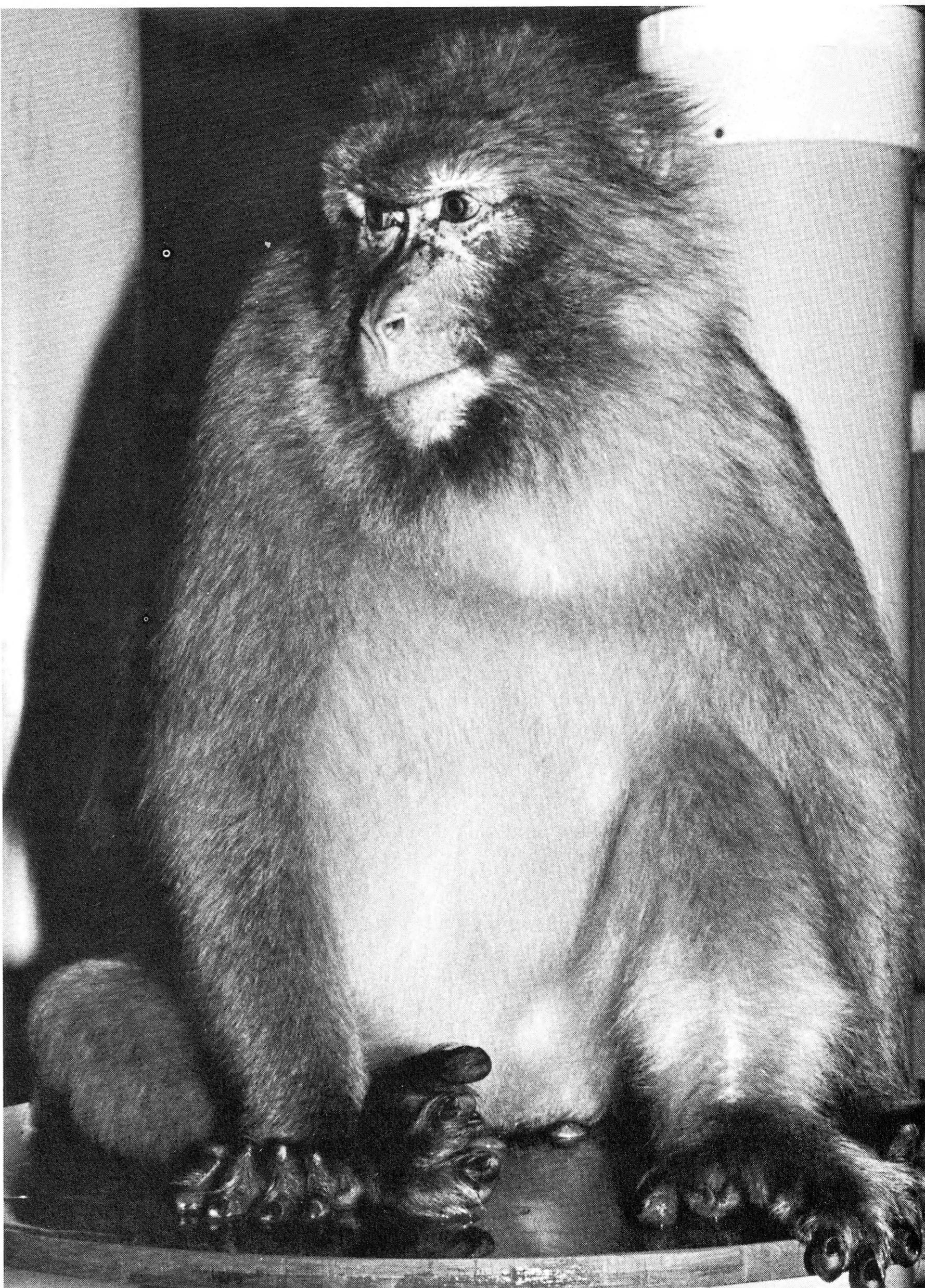
In the Zoo's colobus colony, mouth sniffing seems to be a ritual. The mouth sniffing may take place in the hierarchy. Adult

males are usually the first to try new food. The males occasionally sniff each other's mouths. Adult females will sniff the males' mouths, subordinate females will sniff the mouths of higher-ranking females, and the juveniles will sniff any older animal's mouth.

The howlers may take days to accept a new food. The female tends to wait for the male to try the food first. Other species in the Monkey House are more casual about choosing what they like to eat and less formal in their investigation of new foods.

The next time you pay a visit to the Zoo, you may be able to observe some of these smell-related behavior patterns. So keep your eyes open—and your nose!

Many if not all Old World monkeys, like this Barbary macaque, depend on their nose to tell them when a female is in estrus. Only recently have zoologists documented the full significance of smell-producing chemical substances called pheromones.



A Zoo First— Fennec Babies

Harold Egoscue
Mammalogist

The Zoo's fennec population increased 300% thanks to four puppies born in July at the Small Mammal House. It was the Na-

tional Zoo's first recorded birth of these big-eared, tiny foxes (*Fennecus zerda*) from the deserts of North Africa. Mating by the Zoo's only pair had been observed in late May, and the litter arrived on schedule following the usual gestation of about 50 days.

In captivity, fennec mothers are often nervous, so the exhibit was shielded and roped off temporarily to give the family a few days'

privacy. Extra dens were provided in case the female wanted to move her family.

Observations on growth and development of the litter have been limited to what could be seen during occasional quick looks to check on their progress, which so far has been excellent. By the time the pups were old enough to be up and around, the mother had shifted them several times.

Scampering around mother, these fennec pups are the first recorded births of fennecs at the National Zoo. The litter of four is healthy and growing quickly.



A Bevy of Snakes

Eliza Soyster
FONZ House Guide

The recent population explosion among the Zoo's snakes might have gone unnoticed by the general public because no "preg watches" or other obvious alerts were mounted. Snakes go about the business of reproduction as quietly as they go about life itself. Nevertheless, such varied species as mangrove pit vipers, corn snakes, black rat snakes, Asiatic striped rat snakes, and two species of pythons have replenished themselves this year. Other snakes contributing to the baby boom are puff adders, African house snakes, Indian cobras, and rufous beaked snakes.

Snakes demonstrate interesting contrasts in reproduction techniques as illustrated by the Zoo's Burmese pythons and puff adders. The Burmese python (*Python molurus bivittatus*), one of the world's largest snakes, is a constrictor native to Burma and the Indo-Australian region. It belongs to a very primitive family of living snakes. Its vestiges of pelvis and hind legs indicate descent from a four-legged, lizard-like ancestor. The hind leg remnants

look like claws. These anal spurs are much larger in the male and are used to stroke the female during courtship. This rapid back-and-forth action may be observed by the casual visitor to the Reptile House during the winter when mating occurs. Eggs are usually laid in early spring and hatch approximately two months later. Large snakes may lay as many as 100 eggs, but the usual is 20-40.

The female Burmese python coils her body around the mound of eggs until they hatch. During this two-month period, she does not leave the clutch to feed, although she may drink water. Zoo keepers put a bowl of water nearby so the female does not have to leave the eggs to drink.

All reptiles are exothermic—dependent for warmth on external sources of heat. This fact limits the geographic distribution of snakes and is the reason why snakes in temperate zones hibernate in the colder seasons. However, the female in some python subspecies can produce significant amounts of heat while brooding eggs. The female increases her body temperature several degrees (3-4 according to tests at the National Zoo) by

contracting her muscles to heat the eggs. These contractions often appear to observers to be "hiccuping" but are more like shivering. Interestingly, if all the eggs are removed for artificial incubation, the female continues her coil and muscular contractions until hatching time arrives.

The python's parchment-like egg shells are tough, so it is difficult for hatchlings to cut their way out. The hatching process may take up to a whole day. The hatchling is equipped by nature with an egg tooth that cuts through the resilient shell. The egg tooth drops off soon after hatching. Newborn pythons may be 20 inches long. Parental care by snakes is unheard of, and the newborn pythons disperse right after they hatch.

The puff adder (*Britis arietans*) is a large-bodied, venomous snake which is widely distributed throughout the dry regions of sub-Saharan, Morocco, and the Arabian peninsula. In June one of the Zoo's female puff adders gave birth to 22 young. In contrast to egg-laying (oviparous) pythons, the puff adder does not lay eggs. Her eggs—usually about 30 in number—stay in her body and

develop for approximately five months when the babies emerge live (ovoviparity). These soft-shelled eggs contain a large amount of yolk to nourish the growing embryo. The thin egg membrane usually tears before or during birth. Like pythons, puff adder hatchlings use an egg tooth to cut their way out of the shell. At birth, the 4½ inch long puff adders take off in all directions.

Newborn snakes do not feed until after their first molt. The Zoo's puff adders shed in several hours and were eating the same day. In contrast, baby pythons born in May and June were not feeding until the end of August.

Live-bearing has advantages over egg-laying and is an advanced reproductive adaptation. There are no temperature, humidity, or protection problems for the embryo developing in what amounts to an incubator. Live-bearing is common among the most highly evolved snakes.

The National Zoological Park gives tender, loving care to all its baby snakes and rejoices when they, too, mature and reproduce.



Just a few fingers full at birth, the Zoo's Burmese pythons will grow up to an impressive 15 feet long. The snakes have been staging a baby boom in the Reptile House.

Leopard Cat Born At National Zoo

Almost as big as his mother, the young leopard cat (left), born in May, is on exhibit in the Small Mammal House. About the size of a domestic cat, these wild cousins (*Prionailurus bengalensis*) roam the forests and jungles of Southeast Asia. Little is known about them, but they are described as loners except during mating.





Animal Health

Animal Health

Thomas Crosby

with assistance from:

Drs. Philip K. Ensley, R.
Mitchell Bush, Richard J.
Montali, P. Jack Hoopes, and
Suzanne Kennedy

It's simple when humans get sick. They just call a doctor. But when an animal—especially a Zoo animal—has a problem, it is often hard to discover.

At the National Zoo, a never-ending watch is conducted by curators, keepers, and veterinarians for suspicious signs—loss of appetite, unusual behavior, diarrhea, unexplained laziness—that could mean illness. And when an animal does have a problem, there is the complex task of trying to correct it. Putting a plaster cast on an injured human leg is easy compared to putting a fiberglass cast on the leg of a 350-pound Bengal tiger.

First, the tiger must be lured into a portable "squeeze" cage and

Previous Page: Studying x-rays helps Dr. Mitchell Bush, head of Animal Health, diagnose—and treat—health problems among the Zoo's 2,400 animals.

Expert hands give this infant colobus monkey its first physical. Careful medical care will ensure a long and healthful Zoo life for this endangered monkey.



transported to the Zoo's modern Hospital/Research Building located behind the former administrative headquarters. There the sides of the cage are moved inward to hold the tiger firmly so it can be injected with an immobilizing drug. The amount used must be carefully measured or the animal could stop breathing.

Once unconscious, the tiger is taken to one of the two operating rooms, and a specially trained cadre of veterinarians and medical technicians go to work with the precision of a military drill team. The tiger's temperature is taken, blood samples are extracted, and oxygen is pumped into the tiger—along with anesthesia—through a tube placed in the tiger's windpipe. Blood tests are conducted to make sure the big cat is getting enough oxygen and expelling carbon dioxide. The leg is shaved for casting.

Dr. Mitchell Bush, head of the Zoo's Office of Animal Health, has helped pioneer the use of fiberglass casts for exotic animals. They are quick setting, lightweight, and strong enough to withstand the abuse of an animal trying to gnaw the cast off.

The veterinarians study the bone x-rays and the movement of the leg, then carefully place the cast.

What might have taken 30 minutes for a doctor in a hospital emergency room has taken almost four hours at the Zoo.

All three of the Zoo's veterinarians use the hospital's portable x-ray machine whenever an animal is injured to check for possible internal damage.

Once the cast is in place, the tiger—still unconscious—is placed back in the squeeze cage and

Sophisticated laboratory testing in the Zoo's modern Hospital-Research Building plays a vital role in keeping animals healthy.

watched until it is nearly awake. Then it is transported back to the basement of the Lion and Tiger House to rest while the leg heals.

Nothing comes easily when treating Zoo animals. Some birds are so nervous they die from shock when handled by humans. Almost no wild animal will sit still for a probing physical examination. The veterinarian always carefully considers whether or not to handle an animal. Will the trauma of





being handled be worse for the animal than the illness or injury?

Some injuries that would be fatal to an animal in the wild can be healed in captivity. For example, Dr. Bush has grafted bone from a wolf's rib to fix its broken leg. In the wild, the wolf may have been killed by other predators.

Dr. Bush also devised an artificial peg leg for a serpent eagle. In the wild, if the eagle could not perch, it might starve to death.

While human medicine has advanced rapidly in recent years, knowledge about the care of exotic animals has advanced at a turtle's pace. For example, no one knows what the normal temperature of a polar bear is or what the blood pressure should be in a healthy Barbary ape.

It is the desire to learn that prompts everyone connected with the Offices of Animal Health, Pathology, and Animal Management to keep precise records of everything they do. The records, which the Zoo is computerizing for quick retrieval, will hopefully one day show what is normal for certain animals as well

as provide an accurate medical history of a particular patient.

The National Zoo shares its information with other zoos, and there is an immediate exchange of knowledge between zoos whenever a new medical technique is successfully tried. A new technique was recently tried at the National Zoo to save a dying flamingo. Dr. P. Jack Hoopes, the Zoo's newest resident intern veterinarian, gave three separate blood transfusions to the sick flamingo, including one transfusion of pelican blood.

"It is the first time we know of transfusions being used for medical purposes to save a sick bird," said Hoopes. The transfusions were successful, and there were no signs of rejection. However, the bird died six days after the last transfusion from unrelated internal problems.

Death at the National Zoo is never pleasant, but with nearly 2,400 animals representing over 650 different species—some with short life spans—it is unavoidable. Despite one of the finest medical programs in the United States, a small percentage of animals die at the Zoo each year, many from old age.

Fortunately, the dead frequently

help the living. The National Zoo has a full-time pathologist, Dr. Richard J. Montali, who heads its Office of Pathology. Either Dr. Montali or his staff examine every dead Zoo animal from a baby lizard smaller than your finger to a 6,000-pound elephant. Diseased tissues are scrutinized, blood is analyzed for white and red cell counts, and cultures are grown and studied.

Dr. Montali's findings often lead to better care for the living. Post mortems give vital information about an animal's eating habits. If an animal's nutritional needs are not being met, a new diet will be ordered.

It was Dr. Montali's analysis last year of the body of a blesbok (African antelope) that prevented an outbreak of yersinosis—a potentially deadly disease often called pseudo-tuberculosis—among the hoofed stock. An immediate search revealed that rats and pigeons had brought the disease into the park, and an accelerated extermination program eliminated the guilty rats and pigeons. The hoofed animals were quarantined, and a possibly devastating epidemic was averted.

Dr. Montali's staff recently moved into a spacious, new \$160,000 pathology building be-

Facing Page: All hands full of wriggling snake, three assistants help Dr. Bush (right) get his 15-foot patient, a reticulated python, onto the examination table.

hind the Hospital/Research Building. It can accommodate animals ranging in size from a hummingbird to a giraffe.

Another new building under construction across from the Hospital/Research Building is a quarantine and holding area for hoofed stock and other large animals that must be isolated until they receive a clean bill of health.

Doubling the looking can double the learning at this high-powered microscope. Dr. Richard Montali (right), the Zoo's pathologist, helps an associate diagnose diseased tissue for clues to improve health procedures.



The new buildings and the professionally equipped Hospital/Research Building represent a continuing commitment by the Zoo to give its animals the best medical care possible.

Quarantined animals, patients kept in the Hospital/Research Building, and the animals in the park are checked daily by the Zoo veterinarians, who are on call

for emergencies 24 hours a day.

Frequently accompanying the vets on their daily rounds are specialists in human medicine. Dr. Bush has called on ophthalmologists, oral surgeons, anesthesiologists, radiologists, urologists, and orthopedists to give opinions on difficult animal health problems. "I can get a doctor to look at a sick gorilla quicker than I can get a doctor to look at me," said Dr. Bush.

In addition to the three full-time resident veterinarians, there are veterinary students, called preceptors, and military doctors seeking experience in treating exotic animals who work at the Zoo for short periods.

Army Captain Nelson Isenhower, an anesthesiologist from Walter Reed Hospital, who spent five weeks working with Dr. Bush, said he was fascinated with the way certain drugs produced different results in animals of similar species. "We used the same drug to get the same effect on a polar bear and a grizzly," said Isenhower. "We gave the 900-pound polar bear one milligram, and he was out. We gave the 200-pound grizzly six milligrams, and he needed more."

Such wide variances do not occur

in humans, but some animals have well-developed enzyme systems that can break down a drug so fast it becomes ineffective.

Anesthetizing an animal poses two primary dangers. Too much of the drug could kill the animal — especially huge animals whose weight makes breathing more difficult when unconscious. Give too little of the drug, and the animal may awaken before the veterinarian is finished.

In the Zoo's primate population, these dangers are lessened because of the work done by full-time research assistant Randy Custer. He analyzes the blood gases of unconscious primates to make sure they are getting enough air and expelling the proper amount of carbon dioxide. Custer's research makes it less risky to immobilize such animals as siamangs, gibbons, gorillas, and orangutans.

All of the professionals at the Zoo engage in clinically related research. Dr. Suzanne Kennedy, who is in her second year as a resident veterinarian, has been studying how to treat aspergillosis (a deadly fungal infection) in birds.

Fortunately, the dead frequently help the living. Close-up photographs of this monkey are part of the detailed record keeping and research used by vets to assure the finest of animal health care.



If she makes a breakthrough, it will be to zoo ornithologists like finding a cure for human cancer.

Research is also being done on bone repair, viruses in ducks and boa constrictors, and on the effects of antibiotics in exotic animals. Dr. Bush has also been developing a file of color slides of the internal organs of birds, reptiles, and other animals made with the aid of a 40-lens laparo-

scope, a long tubular device, inserted through a quarter-inch incision to see internal organs.

The Zoo's Office of Animal Health is participating in a pioneering program to collect and preserve semen from captive animals for artificial insemination. Such a sperm bank would preserve valuable gene lines and make it possible to impregnate animals that have breeding prob-

lems. Sometimes it is too expensive and dangerous to ship a captive animal across the country or the world to mate.

Taking care of animals is a kaleidoscopic program that requires curators, keepers, veterinarians, painstaking research, sharing of knowledge, and sophisticated medical equipment.

Outpatient visits are not the norm, but staff hospital work does not stop just because a kangaroo hops in for a lunch of green vegetables.



BOOKNEWS

Best of Friends

The Best of Friends by John Aspinall. Harper & Row. 159 pp. \$15.00

John Aspinall's *The Best of Friends* tells the story of two outstanding wildlife parks, Howletts and Port Lympne, which he operates in the English countryside. Built on the sprawling acreage of former country estates, these parks give their exotic animal residents more room than the average zoo can hope to provide. Aspinall's colonies of gorillas and tigers are among the finest in captivity anywhere, and he has had considerable success in breeding these and other endangered species.

Aspinall has a unique approach to captive animal care. He believes strongly in maintaining a personal friendship with each of his animals—provided, of course, that the animal is cooperative. He attempts to communicate with his animals in their own terms—in their own language, so to speak.

Being the best of friends with exotic animals, whether romping with a tiger or hugging a gorilla, characterizes the unusual approach used by John Aspinall to improve breeding at his private wildlife parks in England.



As many excellent photographs in this book show, he has learned to romp with tigers and share embraces with gorillas.

But Aspinall confesses that as yet he has not managed to remain on friendly terms with a male gorilla beyond the age of about twelve. At that age, his male gorillas apparently begin to view him as a rival. He writes that he has even tried assuming "the posture gorillas use to indicate submissiveness," but still he was not able to convince mature males of his good intentions.

The gorillas are clearly Aspinall's favorites, and he devotes a third of his book to them. At Howletts, he has built a vast "gorillarium," as he calls it, to house 16 of these apes. The size of the gorillarium's cages allows Aspinall to keep gorillas together in larger groups than most zoos can. Therefore, the social milieu is similar to that of a wild gorilla band.

"Gorillas have expressive eyes," Aspinall writes, "and the emotional messages conveyed thereby are strikingly similar to our own. Rage—hatred—fear—love—surprise—disappointment—all are clearly discernible to the practiced eye." A purist might call this anthropomorphism—the attribution of human traits to animals.

But gorillas are, after all, our close relatives. In describing his gorillas, Aspinall makes each of them come alive as an individual personality, without falsifying their gorilla nature.

One well-delineated character is Shamba, the dominant female. In matters of food, Shamba tends to be a little greedy. Once when the author was in her sleeping quarters, he casually handed some food through the bars to another female in an adjoining cage. Shamba immediately showed her jealousy with a barrage of angry "barks." Aspinall countered with his own gorilla-style display of anger. Then, he writes, "To my amazement and delight she came and embraced me with an overt display of affection." Another female, Mushie, has a very different temperament. She always shows great generosity, frequently giving presents of food to Aspinall and his daughters.

The Best of Friends also describes Aspinall's experiences with tigers, chimpanzees, elephants, and other animals. The author tells of several close friendships between man and beast, as well as sudden brushes with danger.

A former hunter who hunts no more, Aspinall began keeping wild animals as a hobby. He ad-

mits that he financed this rather costly venture with gambling profits! Now, Aspinall has a staff of professional keepers and a full-time resident veterinarian.

The book's final chapter contains a plea for conservation intermixed with the author's outspoken opinions on everything from Christianity to the value of social change. Some readers may not agree with his conclusions, but they must admit it's pure Aspinall—blunt, honest, going his own way whether anyone cares to follow or not.

Austin Hughes

Zoo Sponsors Animal Art Events

The Zoo, supported by FONZ, will highlight the exciting world of wildlife with "Sketch-Ins" and special animal art exhibits from November through January.

FONZ members and friends are invited to come to the Zoo from 1 to 3 p.m. on the Sunday afternoons of November 20, December 18, and January 15 to sketch their own interpretation of a favorite animal using the Zoo's live models. All participants will be given sketching materials. Noted local artists will be stationed in designated areas to assist as volunteer teachers.

Just as the Sketch-Ins are open to all ages, beginning or experienced artists, so will the potential subjects of their art be all the animals at the Zoo. Participants will be encouraged to draw anything they like—from the moated elegance of Lion-Tiger Hill to the plushness of a giraffe's eyelashes. There's no guarantee that the animals will agree to strike a convenient pose and hold it for the afternoon, but their inevitable activity will give budding artists a

chance to capture their grace of movement on paper.

The results of the three Sunday Sketch-Ins will be on public display in the lobby area of the new Education/Administration Building. Also exhibited will be the works of the professional artists who served as teachers.

The Zoo's new trail and pictograph system, which uses distinctive graphics and animal footprints to lead the way through the 167-acre park, will help participants quickly find the animal of their choice. For those who prefer to remain indoors, a continuous slide/lecture presentation of the art in the Park—from gargoyles to statues—is scheduled in the auditorium.

"The Animal in Art" event is part of a global effort by the World Wildlife Fund to focus attention and concern on wildlife, particularly vanishing species.

Also in November, visitors to the National Zoo will be able to enjoy animals in art with the opening of a remarkable exhibit, "The Zoo in Miniature." An array of antique toy zoos, animals, and arks, on loan from the Washington Dolls' House and Toy Museum, will be displayed through January in the Education/Admin-

istration Building.

The zoo world, traditionally associated with the joys of childhood, has always been a popular subject for doll and toy makers. The exhibit will include Victorian toy zoos made of metal, wood, and papier-mache, which document with surprising detail just what zoos of old looked like. There are old-fashioned bear pits, elephant riders, performing chimpanzees, balloon vendors, flamboyantly-styled zoo's from India—complete with almond-eyed animals—and even a collapsible cardboard zoo made 60 years ago.

The exhibit will also include the toymaker's many different and colorful interpretations of Noah's Ark, which many consider man's first attempt to collect, house, and save wild animals.

Also on display will be animal-themed blocks, games, and puzzles made for children in America, Europe, and the Far East. This collection includes a charming sectional bird, zoological lotto games, intricate puzzles, and a beanbag bear.

So come to the Zoo this winter and discover the exciting world of animals—in art as well as in real life.

